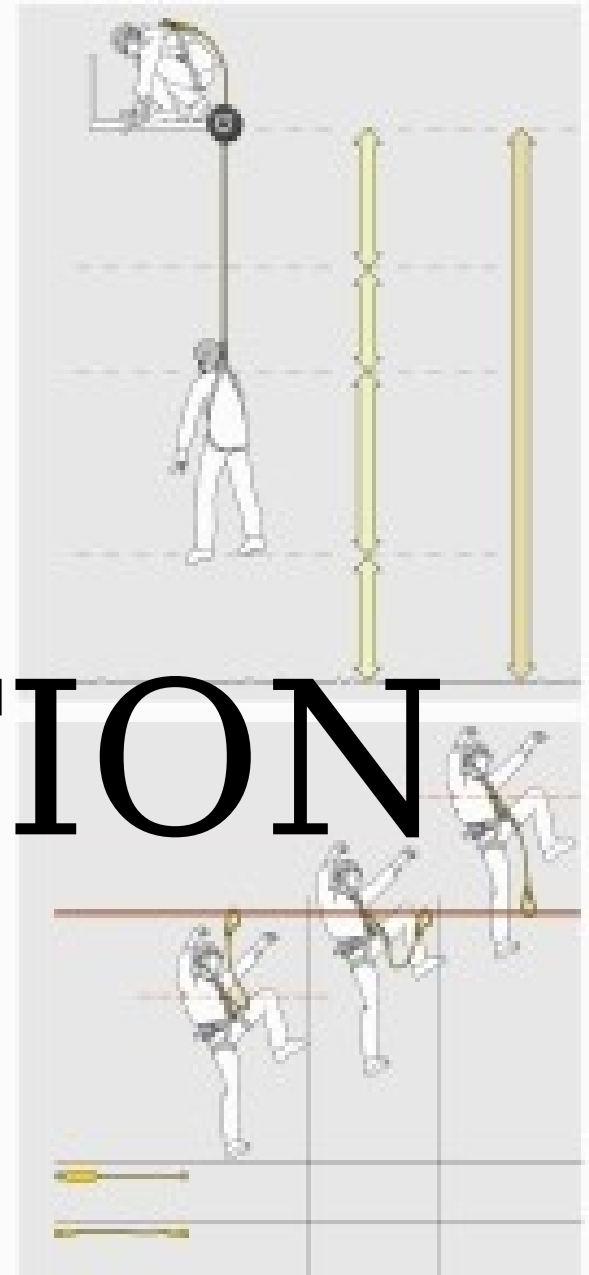


# FALL PROTECTION

©Petzl



# Overview

- Identify fall hazardous areas
- Describing potential fall hazards
- How appropriate portable and extension ladders are used

# Fall Protection

- All situations that expose personnel to a fall of 6' or greater must be assessed by a **competent** person who is trained in fall protection to implement appropriate controls
  - “Military unique” such as obstacle course training and rappelling are covered by SOP or other military standards, but requirements of CFR 1910 and 1926 apply if feasible

# **Unit /Employer Responsibilities**

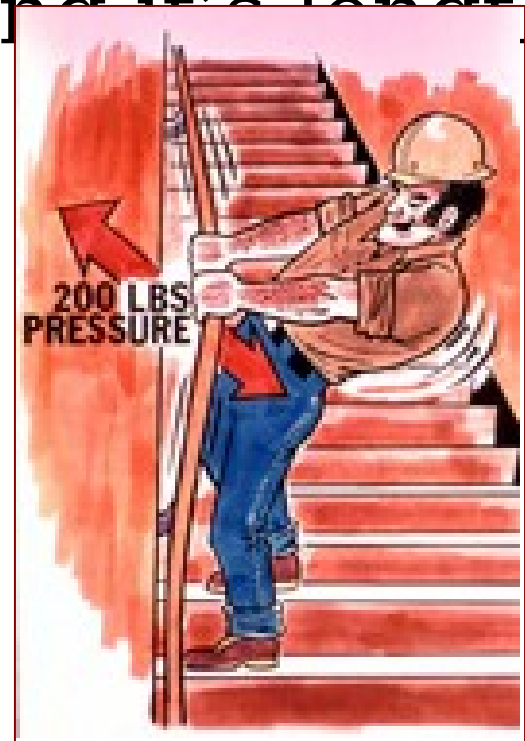
- Ensure personnel who may be exposed to fall hazards receive fall protection awareness training
- Provide fall protection equipment
- Ensure work site hazards are assessed and SOPs relating to fall protection are current

# **Types of Fall Protection**

- Guardrails
- Personal Fall Arrest System with Harnesses
- Safety nets
- Covers
- Warning Line Systems
- Safety Monitoring Systems
- Positioning and Restraint Systems

# Guardrails

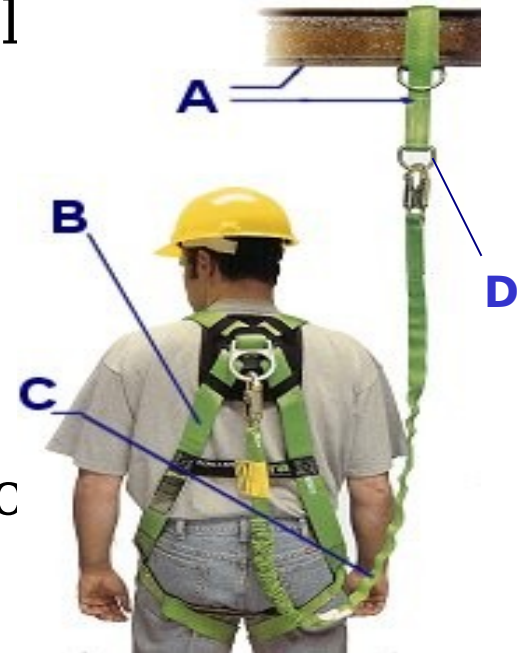
- Temporary or permanent: capable of withstanding 200 lbs force applied within 2" of top edge in any out or downward direction along its length
- Top rail
- Mid rail
- Toe board



# Personal Fall Arrest System

## with Harnesses

- Free-fall is no more than 6'
- All components must be rated at 5000 lbs. breaking strength and be compatible for use together as a system
- May include horizontal, vertical, or self-closing life lines
- System is composed of
  - Anchor system (A)
  - Full body harness (B)
    - Body belts not authorized
  - Lanyard with shock absorbing device (C)
  - Self locking connectors (D)



# Safety Nets

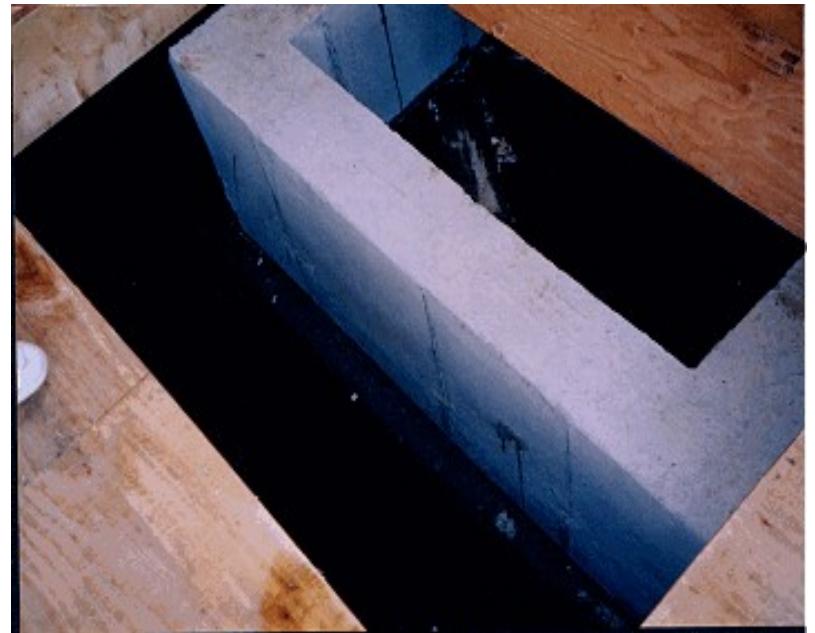
- Extend a minimum of 8 ft. from the edge of the working surface
- Installed as close as possible to the working level
- Able to withstand a weight of 400 lbs. dropped from the highest point of the working surface





# Covers

- Able to withstand twice the weight of personnel, equipment, and materials that may be imposed at any time
- Must be fastened to prevent slipping
- Must be marked “cover” or “hole”



# Warning Line Systems

- System can only be used on low-slope roofs with a pitch equal or less than 4" in 12"
- Rope, wire, or chain placed 34" to 39" high
- Placed at least 6 ft. from the edge of roof
- Flagged with high visibility material every 6 ft.
- Support able to withstand 16 lbs. of force without tipping



# Safety Monitoring System

- A **competent** person
- Must be on the same working surface
- Can have no other duties but observe
- System be used on level and slope roofs only



# Positioning and Restraint Systems

- Will not allow a person to fall more than 2 feet
- Anchor strength must be a minimum of 3000 lbs.



# Rescue Operations

- The ISM and supervisors shall insure personnel can be rescued promptly
- A rescue and evacuation plan must be in place



# Scaffolds

- Scaffolds are elevated platforms that can be moved to reach a desired work level or position
- 2 main types of scaffolds
  - Suspension
  - Mobile



# Scaffolds

## Tube and Suspended







**YOU CAN NEVER BE TOO SAFE.**

Use proper safety equipment. Demand proper training. Refuse unsafe work.

**WSIB**  
ONTARIO  
prevent-it.ca



# Ladders

- Two basic types of ladders
  - Portable ladders
    - Step ladder
    - Extension ladder
  - Fixed ladders





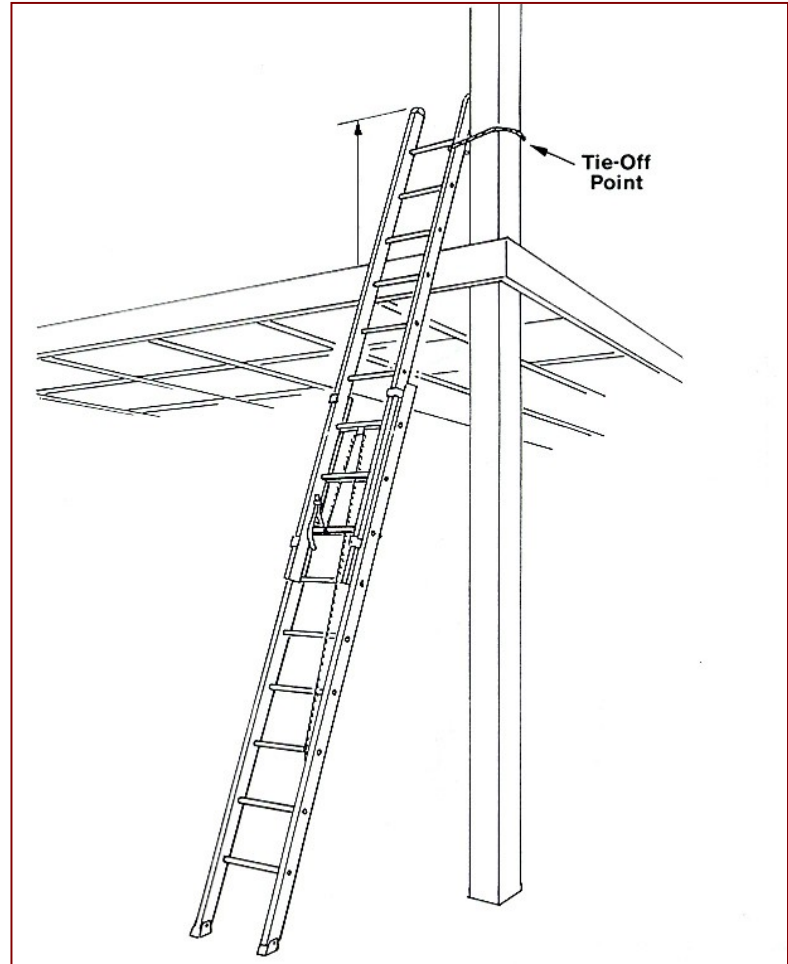
# Portable Ladders

- Stepladder
  - Make sure the ladder is fully open and the spreaders are locked
  - Don't climb, stand or sit on the top two rungs



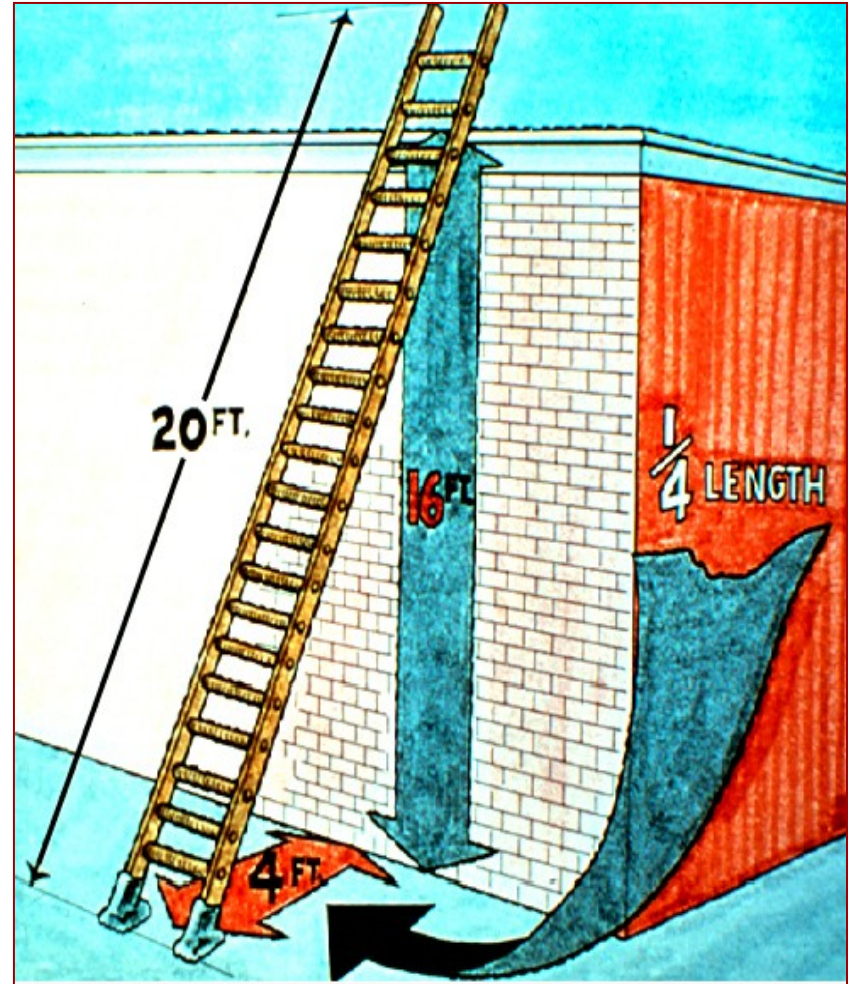
# Portable Ladders cont.

- Extension ladder
  - Set up with about 3 feet extension above the working surface
  - Be sure to secure or foot the ladder firmly before extending
  - Never raise or lower the ladder with the fly section



# Portable Ladders cont.

- Figure out the right set-up angle or pitch - should be about  $1/4$  of the distance from the ladder's top to bottom supports



# General Ladder Safety

- If you must use a ladder in a passageway, set out cones or barricades
- Use both hands for climbing
- Tie off the ladder to a secure object
- Make sure the footing is secure
- Use wooden or fiberglass ladders for electrical work





# Inspecting Ladders

- Look for broken or missing steps or rungs
- Look for broken or split side rails and other defects
- Check footing devices when installed
- Tag defective ladders “out of service” or “do not use”
- Don’t paint ladders, it covers defects



# Use of Ladders

- Portable ladders are designed as a one-man working ladder based on a 200-pound load.
- The ladder base section must be placed with a secure footing.
- The top of the ladder must be placed with the two rails supported, unless equipped with a single support



# Use of Ladders

- When ascending or descending the climber must face the ladder and have two points of contact





# Fixed Ladders

- Must be able to support two loads of 250lbs
- Must be able to withstand rigging, impact loads and weather conditions
- If fixed ladder is longer than 24 ft, must have cages or wells to protect worker from falling



**Stairways**

**use  
handrails !**





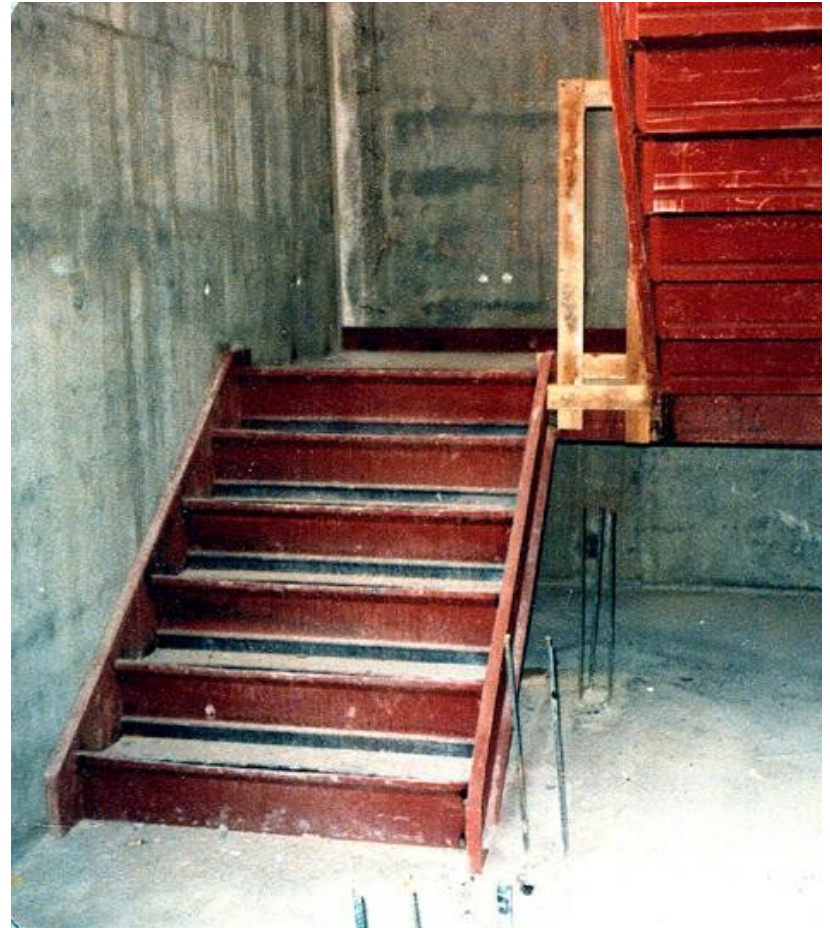
# Stairways

- Must be strong enough to carry 5 times it's maximum intended load
- Treads must be slip resistant and equally spaced



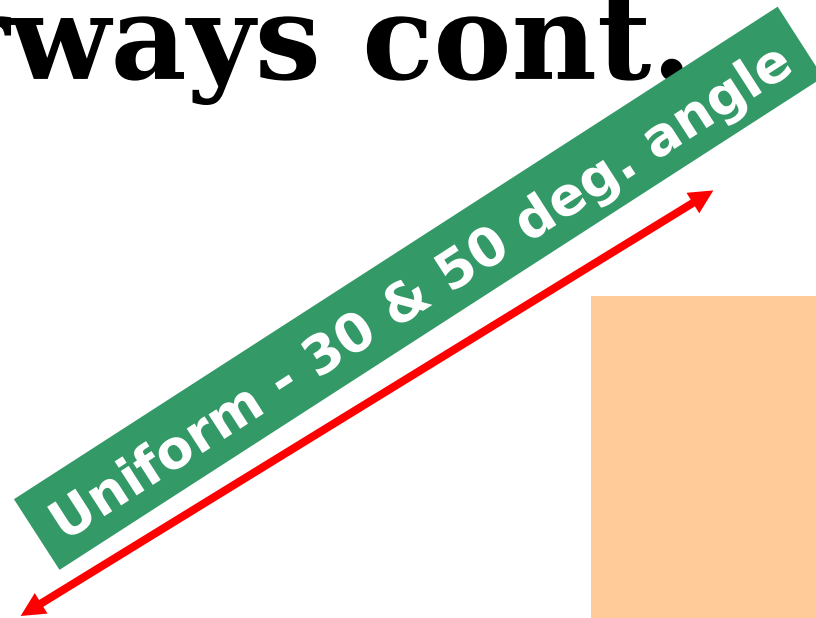
# Stairways cont.

- Stairways landings must be at least 30 inches deep and 22 inches wide at every 12 feet or less of vertical rise
- Unprotected sides of landings must have standard 42 inch guardrail systems



# Stairways cont.

- Install between 30 and 50 degrees
- Must have uniform riser height and tread depth, with less than a 1/4-inch variation



**No more than 1/4 inch  
variation in any stairway system**

# Stairways cont.

Stairways with four or more risers, or higher than 30" must be equipped with at least one handrail



# Stairways cont.

- Fix slippery conditions before using
- Stairway parts must be free of projections which may cause injuries or snag clothing





# Training

- Conducted by a competent person designated by the ISM
- Training shall be provided to all personnel that be exposed to fall hazards



















# References

- NAVMC DIR 5100.8, Chapter 18
- 29 CFR 1910
- 29 CFR 1926
- COE EM-385 2011
- Local SOP



